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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/588,923	06/06/2000	Iwao Okamoto	0941.64338	9435

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EXAMINER
RICKMAN, HOLLY C

ART UNIT	PAPER NUMBER
1773	15

DATE MAILED: 06/10/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

HGT

Office Action Summary	Application No.	Applicant(s)	
	09/588,923	OKAMOTO ET AL.	
	Examiner	Art Unit	
	Holly Rickman	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *7,8,11,14*
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. The objection to claims 3-4 and 8-9 is withdrawn in view of Applicant's amendments.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3-4 and 8-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claims 3-4 and 8-9 recite the broad recitation "Co

alloys", and the claim also recites "Co alloys which include CoCrTa, CoCrPt..." which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The rejection of claims 1-11 under 35 U.S.C. 103(a) as being unpatentable over Carey et al. (US 6280813) in view of Ounadjela et al. (abstract of J. Appl. Phys., Vol. 70, Issue 10, p. 5877), further in view Akopyan et al. (Izv. Akad. Nauk SSSR, Met. (1976) (3), 210-214), and further in view of Wu et al. (US 6221481) is withdrawn in view of Applicant's arguments and upon reconsideration of the Carey reference.

6. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carey et al. (US 6280813) in view of Wu et al. (US 6221481).

Carey et al. disclose a magnetic recording medium having a ferromagnetic CoPtCrB layer, a magnetic Co layer, a non-magnetic Ru spacer layer having a thickness of 0.6 nm, a second magnetic Co layer, and a top magnetic CoPtCrB layer disposed thereon (Fig. 3, col. 5, lines 26-51). The reference teaches that the "ferromagnetic layer" (no. 14 in Fig. 1) and the "magnetic layer" (no. 12 in Fig. 1) have magnetization directions that are antiparallel (see figures 1, 2a, and 4). The reference also teaches that the spacer layer is formed from Ru, Cr, Rh, Ir, Cu,

and alloys thereof (col. 7, lines 52-55). As such , the reference suggests adding any one of the elements (aside from Ru) to a Ru spacer layer. The reference is silent with respect to the degree of lattice mismatch between the non-magnetic spacer layer and the adjacent magnetic and ferromagnetic layers.

Wu et al. teach that a close lattice match is desirable because it allows for smooth epitaxial growth and provides a recording medium with a high signal-to-noise ratio (see abstract).

It would have been obvious to adjust the concentrations of the various elements in the spacer layer taught by Carey et al. in order to achieve the optimal lattice parameter for optimal matching. Such an optimization would have been obvious since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claims 1-4 and 10 require a lattice mismatch of less than 6%. It is the Examiner's contention that it would have been obvious to optimize this parameter in order to achieve optimal lattice matching and improved magnetic recording properties as a result since lattice matching affects the epitaxial growth and signal-to-noise ratio of a recording medium as disclosed by Wu et al. Such an optimization would have been obvious since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Response to Arguments

7. Applicant's arguments filed 3/6/02 have been considered but are moot in view of the new ground(s) of rejection.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (703) 305-2642. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703) 308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Holly C. Rickman
Patent Examiner
Art Unit 1773

hcr
June 7, 2002